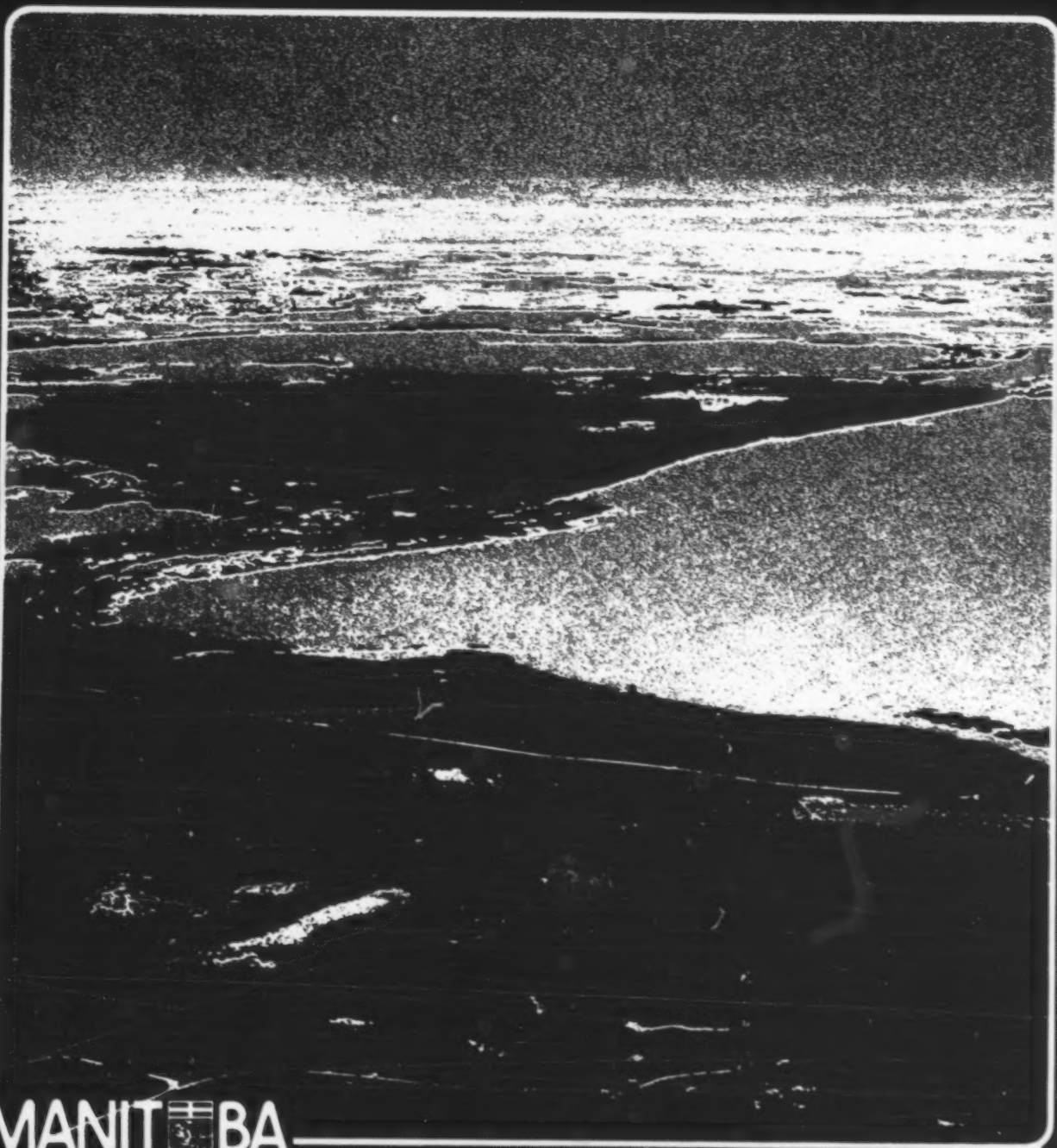

MANITOBA

Manitoba
Natural Resources

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prepared by the
Resource Allocation Working Group

PLANNING REPORT ON NATURAL RESOURCES

TOWN of BIRTLE

Technical Report 86-02

Preface

Municipal Councils or established Planning District Boards are charged with the responsibility for municipal land use planning and development. This document has been prepared in response to a request from the local municipal planning authority for background material on the subject of natural resources for which the Department is responsible.

This document describes the natural resources in the study area, and identifies Provincial and Departmental concerns and objectives from a land use, development planning perspective. It offers for review, policies and guidelines to remedy, mitigate or anticipate issues and land use problems.

The bases for this report are the Provincial Land Use Policies dealing with natural resources and the policies of the Department of Natural Resources.

Municipal planning is a consultative process, and the information and policies discussed in this document are offered as advice to the local authority in their land planning deliberations.

Table of Contents

		Page
I.	FISHERY RESOURCES Present Conditions/Introduction; Concerns/Objectives; Policies/Guidelines; Implementation	1
II.	OUTDOOR RECREATION Present Conditions/Introduction	5
III.	WATER RESOURCES: GROUNDWATER Present Conditions/Introduction; Concerns/Objectives; Policies/Guidelines; Implementation	6
IV.	WATER RESOURCES: SURFACE WATER Present Conditions/Introduction; Concerns/Objectives; Policies/Guidelines; Implementation	8
V.	CROWN LANDS Definition; Acts Affecting Crown Lands; Management and Administration of Crown Lands; Crown Land Classification and Planning	10

Maps and Figures

Map 1. Groundwater Pollution Hazard Area
Map 2. Surface Drainage Systems

Figure 1. Topographical and Geological Features

FISHERY RESOURCES

1. PRESENT CONDITIONS/INTRODUCTION

Birtle Lake is an impoundment on Birdtail Creek in the Town of Birtle (Figure 1). The old P.F.R.A. dam, constructed in 1949, has a full supply level of 464.6 metres (1524 feet) above sea level. At this elevation, the lake has a surface area of about 20 hectares (50 acres), a maximum depth of about 3 metres (10 feet) and a volume of 220 cubic decametres (180 acre feet). Water levels fluctuate with prevailing inflows and operation of the outlet.

Northern pike and common suckers are the dominant species in Birdtail Creek. Lesser numbers of yellow perch, walleyes, rock bass and catfish have been reported over the years. Also, six minnow species have been identified.

Between 1935 and 1951, Fisheries Branch stocked about 1.4 million walleye fry, 5 thousand adult perch and 100 adult pike in Birtle Lake. Between 1970 and 1971, 4,000 rainbow trout were stocked south of Birtle where P.T.H. 568 crosses Birdtail Creek. Trout survival was very limited.

In most years, spawning fish move out of the Assiniboine River into Birdtail Creek. This upstream movement is arrested by the dam, consequently, angler success is highest below the dam in spring and early summer. Some pike are caught on Birtle Lake and Birdtail Creek above Birtle.

In August, 1984, a brief survey of fish species in the Birdtail River between Riding Mountain National Park and Birtle showed large numbers of young suckers and darters. Several young pike were also noted and resident anglers reported adult pike being caught. Due to zero flows in the creek from just north of Birtle to just south of Glen Elmo, fish were trapped and stranded in shallow pools interspersed between rock, mud and shale flats. At this time, slight flow through the Birtle Dam was noted. This may indicate some spring activity and subterranean water movement between these isolated surface pools.

Spring run-off was relatively light in 1983 and 1984 so fish were unable to bypass the dam. The fact that fish still survived above Birtle in 1983 and 1984 would indicate that they were able to survive in Birtle Lake, some of the deeper beaver dams near Riding Mountain National Park, or are flushed downstream from permanent overwintering areas in Riding Mountain National Park. The fish stranded in the shallower pools probably winterkilled in 1983 and 1984.

A fishway 3 metres long, 1.5 metres wide and 1.5 metres deep (10 feet x 5 feet x 5 feet) was built into the south end of the concrete weir of Birtle Dam. The baffled chute, from channel level below the dam to the base of the weir, was constructed of wood planks, but these were not maintained and, at present, no longer exist. High flow conditions would be required before fish could bypass the structure. There is a 1.2 metre (4 feet) drop between the crest of the weir and a 3 metre (10 foot) wide horizontal concrete apron at the base of the weir. A scour hole about 1.2 metres deep (4 feet) has been eroded into the heavy rock rip rap below the apron . The coarse rock rubble below the weir allows water to pour through the rocks but under low flow conditions restricts upstream fish movement. Downstream water elevations below the dam would have to reach the entrance of the fishway before fish passage could occur.

Under some flow conditions, fish passage past the dam may be possible through the control structure. A low water level in Birtle Lake plus an unobstructed flow through the structure may allow some fish passage. However, under most flow conditions, high water velocities through the control structure would exceed the swimming capability of Birdtail Creek fish species.

Consideration has been given to the reconstruction of the fishway. A rehabilitated fishway would provide unimpeded fish movement in high flow years. However, in some low flow years like 1983 and 1984, stranding of the spawning adults and young of the year fish could have a negative impact on fish stocks, worse than if no fishway existed. This is especially true for pike that normally move upstream at break up but often linger in their downstream movement until late fall or early winter.

Further winter testing is required in Birtle Lake to determine if dissolved oxygen levels are sufficient to allow overwinter survival. A test in 1967 indicated a high probability of overwintering. The existence of overwintering fish populations above the dam may reduce the need for a fishway.

Fishways are costly to build and maintain. Under The Fisheries Act, the owner of a fishway (presently the Town of Birtle) would be responsible for its operation and maintenance.

II. CONCERNS/OBJECTIVES

The waters of Birtle Lake originate from upstream sources and can become contaminated from various sources. Agricultural activities, for example, can add fertilizers through erosion, drainage and livestock operations. Fertilizers in water often result in proliferation of algae and aquatic weeds. Considerable weed growth occurs in Birtle Lake. As algae and aquatic weeds decay, dissolved oxygen is taken from the water. Excessive organic decomposition can lead to very low dissolved oxygen levels and fish suffocation. Eroded organic soils usually carry high phosphorous levels. Phosphorous is a major component in most fertilizers.

Any factors that adversely influence water quality or quantity can adversely influence fish populations. Since demand is high and fishing opportunities are few, existing fisheries and upstream watersheds should be protected from nutrient loading and contamination.

Fish are a renewable resource and it is incumbent upon all governments to ensure the provision of a suitable habitat that will assure continuing fish stocks for the long term benefit of all Manitobans.

Specifically, the fisheries concerns/objectives are:

1. To ensure the survival or improvement of fish stocks, subject to the effects of natural environmental changes and approved man-made environmental changes, fish habitat associated with Birtle Lake and Birdtail Creek should be protected.

2. To maintain, enhance and diversify angling opportunities to Manitobans to meet existing and future demands.

3. To promote communication and co-operation between private landowners, industry, the public, local government and the Department of Natural Resources so as to achieve high standards of conservation practice.

III. POLICIES/GUIDELINES

Although fisheries habitats are being stressed and have been reduced, what remains can be retained and enhanced by judicious use of land and water in the Planning District. In order to achieve the fisheries objectives and to mitigate and alleviate concerns, the following apply:

1. Fisheries habitat, spawning sites and nursery areas should be protected.

   a) Ditching and stream rechannelization should not be permitted in direct tributaries to watersheds capable of supporting spawning and nursery habitat. The construction of dykes as opposed to channel deepening and straightening shall be encouraged. Measures to limit nutrient and sediment inflow shall be encouraged.

   b) Land clearing, cultivation and development to the edge of significant waterways shall be prohibited. Where possible a buffer strip of natural vegetation 91.5 metres (300 feet) wide from the ordinary high water mark shall be maintained along the watershed. Development or maintenance of appropriate vegetative cover along waterways to prevent erosion, siltation and recuce run-off shall be encouraged.

   c) Enrichment of natural waters (organic loading or siltation) as a result of agricultural run-off from all lands shall be discouraged.

   d) River and stream crossings associated with road development should be constructed with reference to the Department of Natural Resources' stream crossing guidelines to minimize damage to fish and fish habitat.

2. Shoreline subject to intensive use and development should be protected from excessive erosion and organic loading. Activities that discharge pollutants shall be restricted in their location and it may be required that precautionary safeguards that mitigate the pollutant be incorporated into the development activity.

3. The right of public access to fishing waters shall be maintained in accordance with such Acts, Regulations and contracts that are in place from time to time.

4. Wherever practical, the maintenance and/or increase of water levels and flows to maintain and improve fish populations shall be encouraged.

IV. IMPLEMENTATION

The objectives and policies with respect to fisheries shall be implemented as follows:

1. By assistance and advice on conservation practices by the staff of the Department of Natural Resources.

2. By public and private co-operation through management and development agreements.

3. By the Council through the judicious use of restrictive zoning by-laws, subdivision control procedures and the issuance of development permits.

OUTDOOR RECREATION

I. PRESENT CONDITIONS/INTRODUCTION

Parks Branch has minimal existing or proposed involvement with the Town of Birtle. The only existing recreational facility formerly operated by Parks Branch was a wayside park which has been transferred to the Town of Birtle. This wayside has been deleted from the Parks system.

Parks Branch does not have any plans to develop additional facilities within the Birtle Planning District.

WATER RESOURCES: GROUNDWATER

I. PRESENT CONDITIONS/INTRODUCTION

Large quantities of groundwater are available in the Town. Groundwater quality, however, is only poor to fair and therefore could limit its use.

Two kinds of aquifers exist under the Town: an extensive and thick aquifer that underlies almost the whole Town (Figure 1) and shallow sand and gravel aquifers within the alluvial deposits under the flood plain of the Birdtail Valley (Map 1). The potential yield of the extensive sand and gravel aquifer could be more than 75 L/s (1000 I.G.P.M.) at some locations. The potential yield of the shallow sand and gravel aquifers in the Birdtail Valley varies considerably from place to place and could be up to 5 L/s (65 I.G.P.M.).

Water in the extensive sand and gravel aquifer is fairly highly mineralized (total dissolved solids 1600 mg/L to 2400 mg/L), moderately to very hard (hardness 270 mg/L to 900 mg/L) and slightly salty (sodium 240 mg/L to 500 mg/L and chloride 150 mg/L to 320 mg/L). High sulphate is also common (300 mg/L to 900 mg/L). In the vicinity of the Birtle well, field water in the shallow aquifers is similar to that of the deep aquifer but it could be better at other locations where local groundwater recharge is better, for example, where there is infiltration from Birdtail Creek.

The shallow sand and gravel aquifers are subject to pollution by infiltration from the surface (Map 1).

The extensive sand and gravel aquifer is not subject to pollution because outside the Birdtail Valley it is overlain by very thick layer of glacial till (Figure 1) and in the bottom of the Valley, where the till layer is thin, the hydraulic head is above or near ground level and prevents infiltration into the aquifer.

II. CONCERNS/OBJECTIVES

The total groundwater supply in the Town is abundant for present requirements and for new development. Groundwater is the source of municipal water supply for the Town of Birtle, domestic and farm requirements in the vicinity. Hence the overall concern is groundwater resource management and protection to assure adequate supply for existing users and for potential development. In most of the Town the aquifers developed for water supply are overlain by sufficiently thick low-permeability surficial deposits to prevent pollution of the aquifers. Shallow aquifers subject to pollution may exist in the Birdtail Creek Valley. The area where groundwater pollution may occur is indicated on the groundwater pollution hazard map (Map 1).

Objectives:

1. To manage the aquifers in a manner that would not deprive existing users of their water supplies and would not be detrimental to groundwater potential in the District.

2. To maintain groundwater withdrawal within acceptable limits.

3. To prevent aquifer pollution.

III. POLICIES/GUIDELINES

1. Intensive development (subdivisions) and high capacity wells should be permitted only in areas where they will not cause a reduction in water supplies for existing users.

2. Groundwater consumption should not exceed the total sustained yield of an aquifer.

3. Wells should be installed in a manner that would not have a detrimental effect on aquifers.

4. Activities that may cause pollution under normal operating conditions or by accident should not be permitted in the groundwater pollution hazard areas unless it can be proved by adequate field investigations that the proposed activities will not cause pollution of existing or potential groundwater supplies in the area.

IV. IMPLEMENTATION

1. Aquifer management is implemented by the Water Resources Branch of the Manitoba Department of Natural Resources under the provisions of The Groundwater and Water Well Act and The Water Rights Act.

2. Well construction in respect to prevention of detrimental effect in aquifers is regulated by the Water Resources Branch of the Manitoba Department of Natural Resources under the provisions of the regulations made under The Groundwater and Water Well Act.

3. Aquifer pollution prevention is implemented by the Environmental Control Services of the Department of Environment and Workplace Safety and Health.

WATER RESOURCES: SURFACE WATER

I. PRESENT CONDITIONS/INTRODUCTION

The Town of Birtle is situated along the Birdtail Creek, which flows in a deep, well defined valley in this area. A review of Water Resources Branch files revealed no complaints regarding flooding, drainage, erosion or bank stability problem in Birtle. It would appear that, in spite of the geographical setting of the Town along a waterway and on sloping terrain, development has preceded in such a manner so as to avoid hazard lands. Aerial photographs do show low, possibly flood prone lands adjacent to the Creek, but these lands are largely vacant. (Map 2)

II. CONCERNS/OBJECTIVES

Even though there appear to be no major problems respecting development of hazard lands to date, it is appropriate to ensure that hazard lands are not developed in the future. In this respect the following objectives are established:

1. To minimize personal hardship and inconvenience, adverse affects on public health and loss of life.

2. To minimize property damage and public expenditures for relief or protection in areas subject to flooding, water erosion, wind erosion, bank instability, landslide or subsidence.

3. To restrict activities which would accelerate or promote damages arising from causes such as erosion or bank instability.

4. To acquire access to all waterways in order to carry out public work projects when required.

5. To maintain the natural capacity of the streams to convey flood flows.

6. To encourage the preservation of natural vegetation along the banks of waterways.

III. POLICIES/GUIDELINES

1. Development in areas which, in the opinion of the Board or Council may be subject to physical hazards, shall generally be limited to agricultural uses or open space uses. Under special economic or social circumstances, the Board or Council may permit more intensive development if the hazard is eliminated or protected against. Development in hazardous areas shall be subject to the following requirements:

   a) If the land is subject to flooding all permanent structures must be located on land which has been raised by fill to an elevation at least 0.6 metres above the 100-year flood level.

b) Land which may be eroded away within a period of 50 years must be excluded from development unless it is demonstrated, to the satisfaction of the Board or Council, that the erosion process has been halted.

c) Development shall not be permitted on lands subject to bank instability, landslides or subsidence.

d) All structures and services shall be protected against damage and shall be functional under hazard conditions.

2. Notwithstanding (1) development will not be permitted if, as a result of the development:

a) There is an added risk to life or safety, or

b) Water flow, flow velocities or stages are adversely altered, obstructed or increased.

3. Activities such as dumping, excavation, clearing, cultivation, or excessive grazing which would accelerate or promote dangerous erosion or bank instability will be prohibited.

4. In areas where the specific hazard has not been defined, permanent structures shall be set back from all waterways a distance of at least 10 times the height of the bank above channel grade or 60 metres whichever is greater unless an engineering investigation shows that these limits may be reduced.

IV. IMPLEMENTATION

The policies shall be implemented by means of, variously, zoning by-laws, conditions of subdivision approval, the issuance of development permits and building permits, development agreements and such programs as are determined from time to time by the Boards or Councils to be necessary and not in conflict with the provisions of any part of the Plan.

CROWN LANDS

DEFINITION

Crown land, for the purposes of this section, is defined as all land under Order-in-Council designated as: Provincial Park, Provincial Forest, Ecological Reserve, Wildlife Management Area, and Community Pasture, plus all other land administered by the Department of Natural Resources and Department of Agriculture under 'The Crown Lands Act'. In addition, all water bodies, streams, rivers, and creeks are considered Crown lands except where original title has confirmed the lake bed or stream bed to an individual.

ACTS AFFECTING CROWN LANDS

There are a variety of acts which affect the administration and management of Crown lands. For the purposes here, the principal acts which govern use and management of these lands are:

1. The Crown Lands Act,
2. The Fisheries Act,
3. The Forest Act,
4. The Provincial Park Lands Act,
5. The Water Power Act,
6. The Rivers and Streams Act,
7. The Wildlife Act, and
8. The Water Resources Administration Act.

MANAGEMENT AND ADMINISTRATION OF CROWN LAND

The actual management and administration of Crown land is split between two Departments of Government, the Departments of Natural Resources and Agriculture. The Agricultural Crown Lands Branch has been assigned the functions and related administration pertaining to the issuance of agricultural leases and permits of occupation or use of those Crown lands which are designated by the Minister of Natural Resources as:

1. primarily agricultural lands, and

2. designated as multiple use lands which may only be used for agricultural purposes on an interim or secondary use basis, subject to specific conditions and covenants required by other resources users.

The principle responsibility for Crown land remains with the Department of Natural Resources, which administers The Crown Lands Act excepting those specific sections under the responsibility of the Minister of Agriculture.

The Minister of Natural Resources is responsible for administration, direction and control of the surveys of Crown lands. Survey monuments defining Township, Section and Quarter Section corners have been established throughout the Planning District.

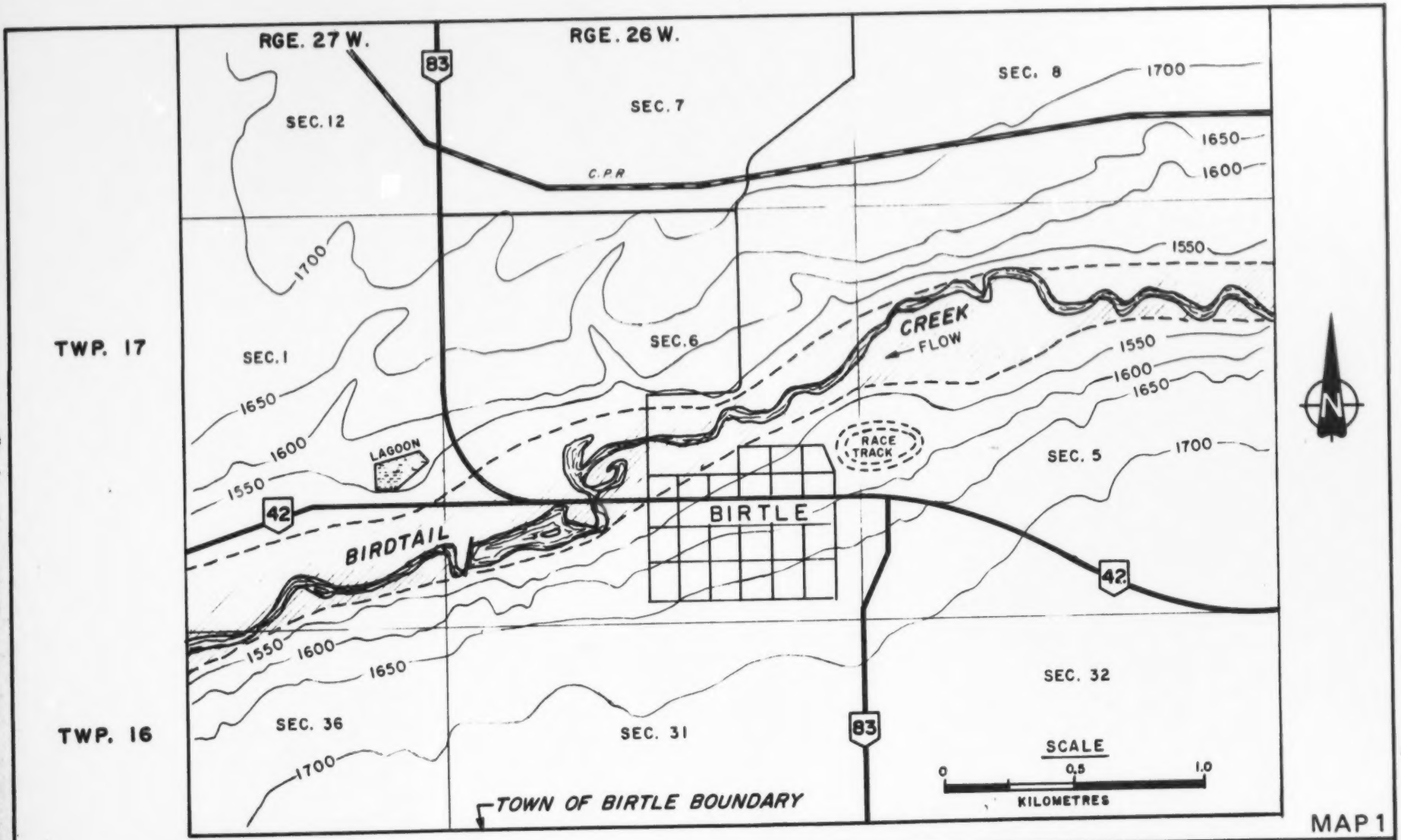
The protection of the township survey fabric, the primary function of which is to support the transferring of rights in land via The Real Property Act or The Crown Lands Act, is essential to efficient and effective land administration. No system, purporting to give evidence of the ownership of land is complete if one cannot determine what land is being conveyed or where its boundaries are located. Boundaries, once defined, are a matter of law and the survey monument is the vital link between the ground and the administrative record.

CROWN LAND CLASSIFICATION AND PLANNING

Crown land is exempt from The Planning Act and is under the jurisdiction of the Manitoba Government as governed by the various acts of the Legislature mentioned above.

The classifying to use of Crown land in the southern portion of the Province is the responsibility of the Crown Land Classification Committee, (CLCC). This is an Interdepartmental Committee with representation from the Departments of Agriculture, Natural Resources and Municipal Affairs. The CLCC reports to and receives their direction from the Provincial Land Use Committee of Cabinet.

In carrying out this responsibility, the CLCC has established Bloc Planning Committees (BPCs). These BPCs have regional representatives from the Departments of Agriculture, Natural Resources and Municipal Affairs. The BPCs provide field recommendations, in effect, providing to the CLCC preliminary land use plans for their consideration of Crown lands. They are not, however, final plans. The Crown Land Classification Committee requires that all such plans must be reviewed and commented on by Local Councils and/or Planning District Boards. It is only after such review and appropriate adjustment if necessary, that a final Crown land plan is prepared.



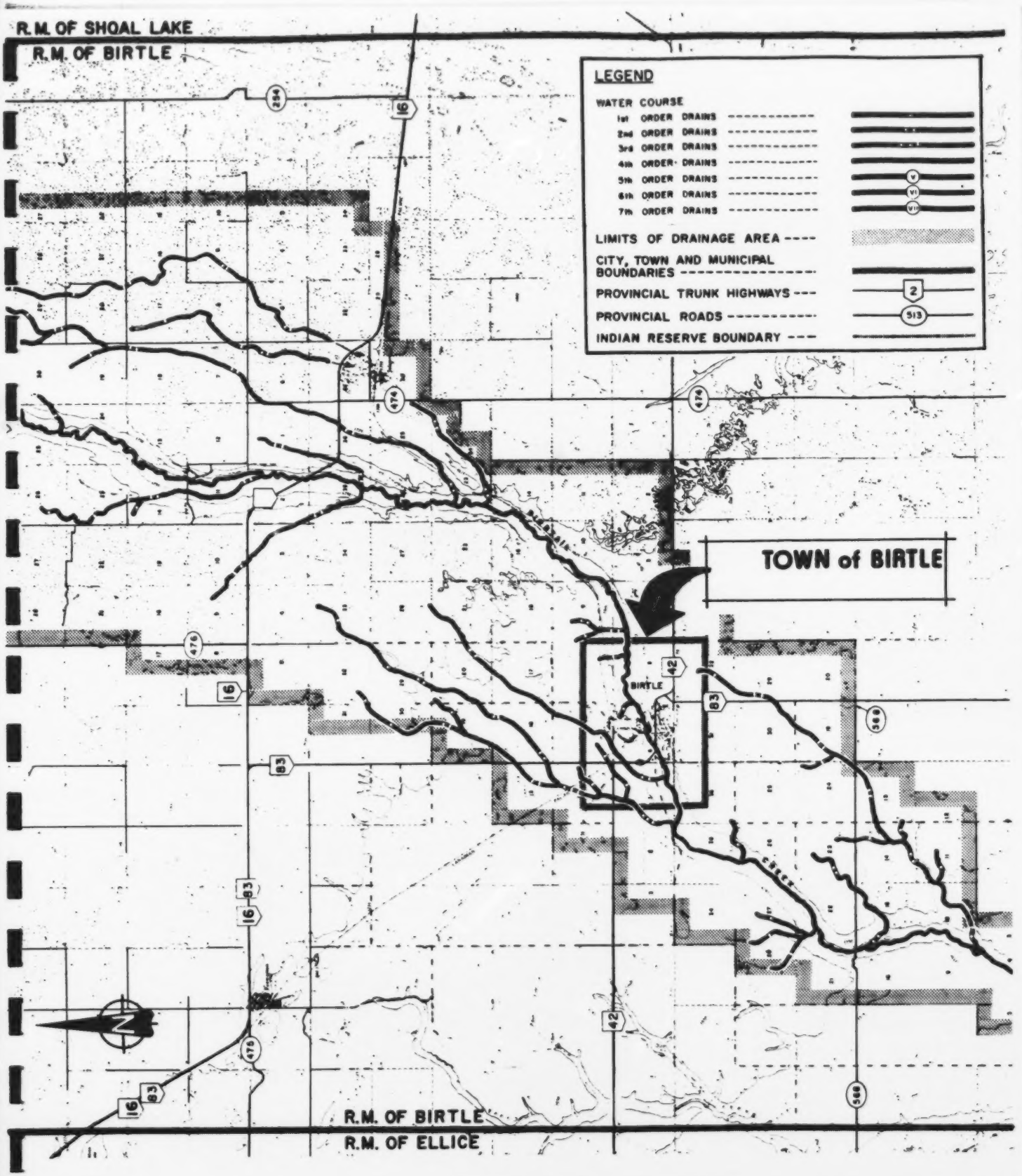
MAP 1

LEGEND

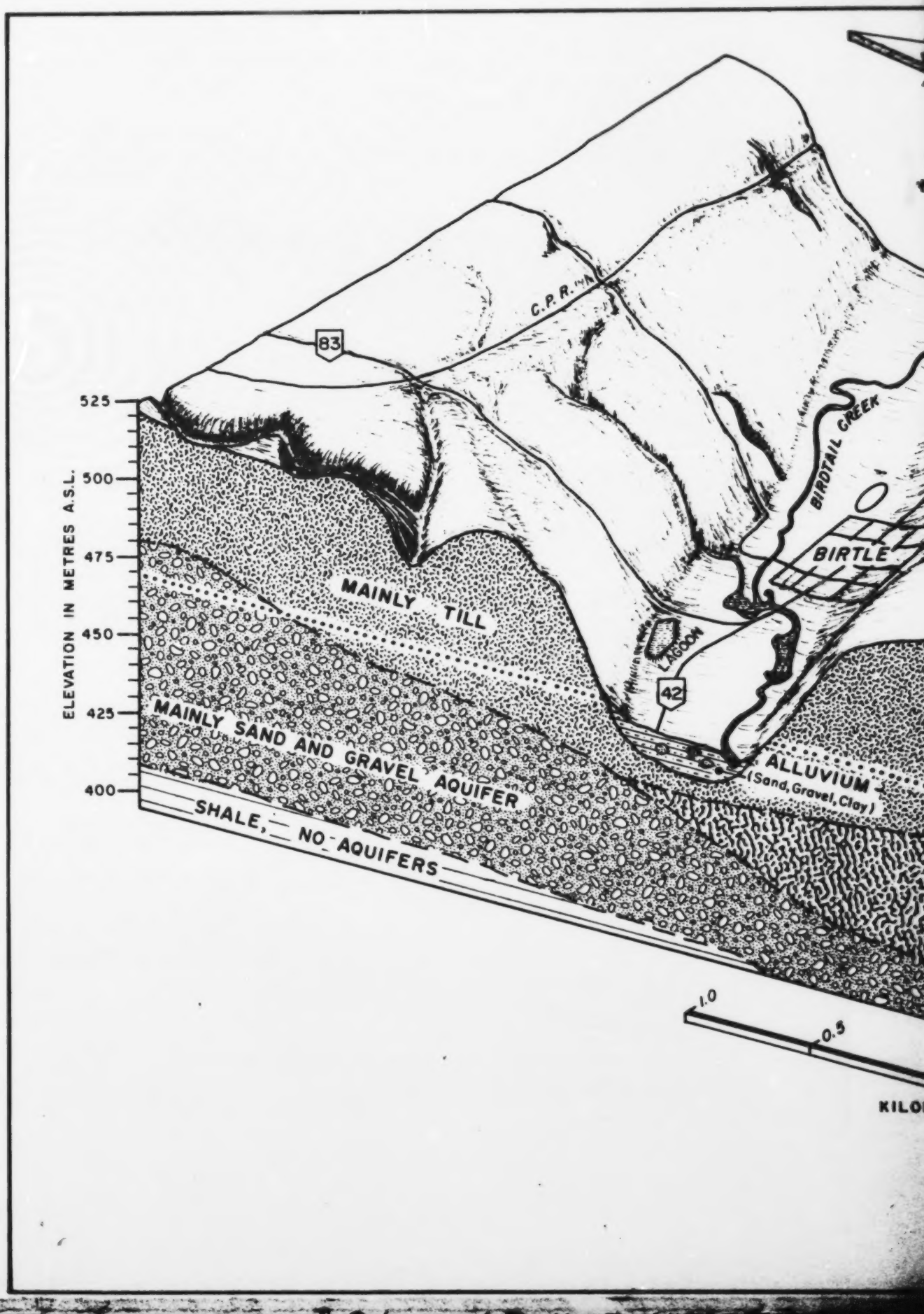
▨ – GROUNDWATER POLLUTION HAZARD AREA – Shallow sand and gravel aquifer subject to infiltration of pollutants from surface may exist in this area.

—1700— – Elevation Contour in feet

DRAWN: F. B.R.	Manitoba Natural Resources Water Resources	TOWN OF BIRTLE PLANNING DISTRICT			
CHECKED:		GROUNDWATER POLLUTION HAZARD AREA			
PREPARED: M. Rutulis	SUBMITTED: L. Gray	APPROVED:	SCALE: AS SHOWN	DATE: 85 11 05	SHEET: 2 of 2	FILE NO.



Map 2.
Surface Drainage Systems


C.P.R.
83
BIRDTAIL CREEK
BIRTLE
LAGOON
42
ELEVATION IN METRES A.S.L.
525
500
475
450
425
400
MAINLY TILL
MAINLY SAND AND GRAVEL AQUIFER
SHALE, NO AQUIFERS
ALLUVIUM
(Sand, Gravel, Clay)
1.0
0.5
KILO

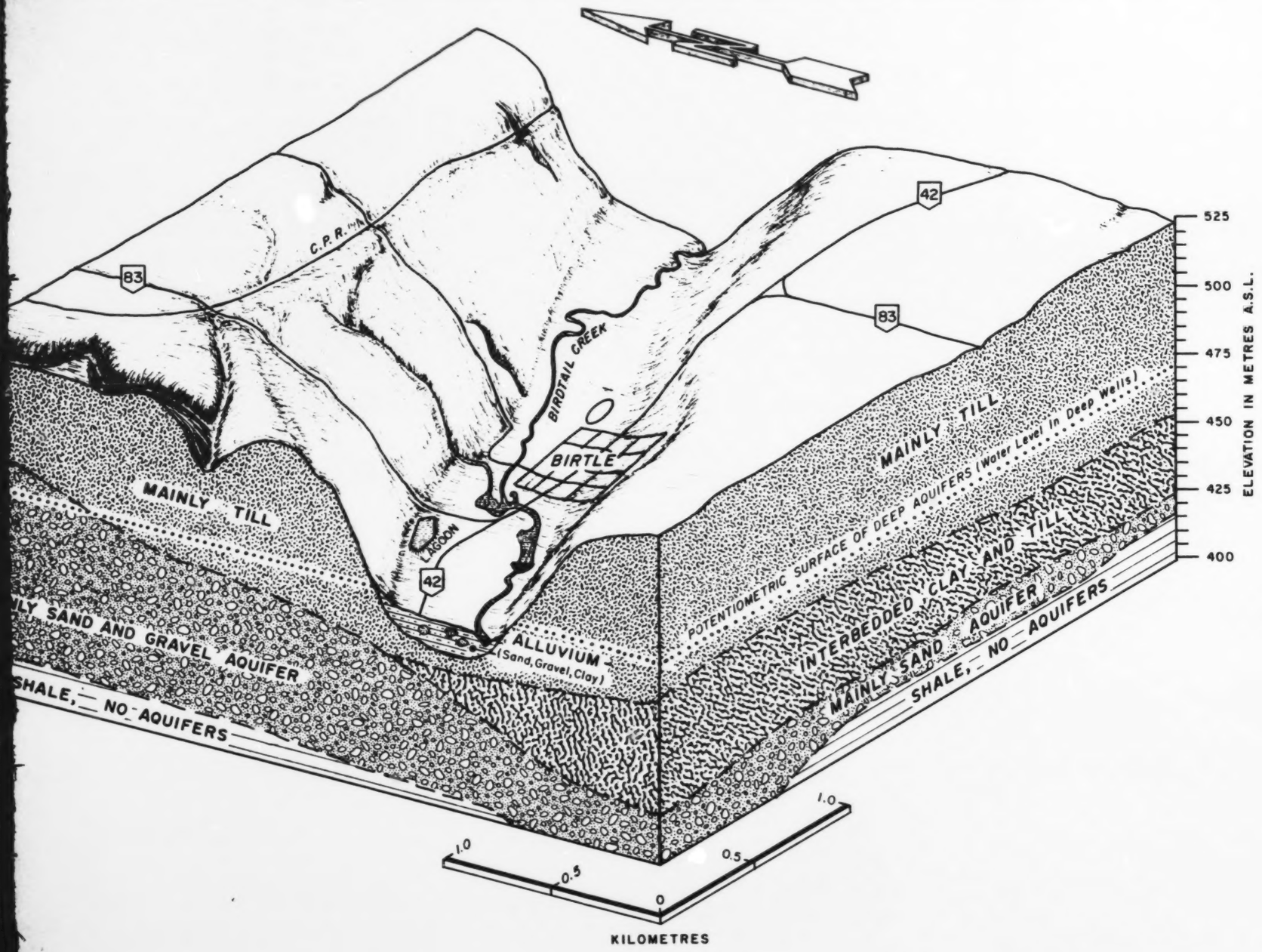


FIGURE 1

DRAWN F.B.R.	Manitoba Natural Resources Water Resources	BIRTLE PLANNING DISTRICT
CHECKED		TOPOGRAPHIC AND GENERAL HYDROGEOLOGICAL SETTING
PREPARED M. Rutulis	SUBMITTED L. Gray APPROVED	SCALE AS SHOWN · DATE 85 11 05 · SHEET 1 OF 2 · FILE NO.